IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A maze generation method for generating a maze, using a genetic algorithm, the method comprising ~~the steps of~~:

~~generating blocks by~~ dividing a given plane into ~~given~~ shapes to produce generated blocks;

setting ~~reference point blocks for setting walls in~~ alternate blocks of the generated blocks to be reference point blocks;

assigning~~, to the reference point blocks~~ a chromosome to each reference point block, the chromosomes for determining ~~ways to set walls in~~ blocks which are set to be contiguous on sides of ~~one side to~~ the reference point blocks; and

optimizing, by a processor, the ~~searching for an optimum~~ chromosomes ~~to be~~ assigned to the reference point blocks by the genetic algorithm, to generate an optimum maze.

Claim 2 (Currently Amended): An antenna optimum design method for designing a structure of an antenna having a ~~structure in which a~~ metal patch [[is]] placed on an antenna element plane, using a genetic algorithm, the method comprising ~~the steps of~~:

~~generating blocks by~~ dividing the metal patch on the antenna element plane into ~~given shapes~~ blocks to produce generated blocks;

setting ~~reference point blocks in~~ alternate blocks of the generated blocks to be reference point blocks;

assigning~~, to the reference point blocks~~ a chromosome to each reference point block, the chromosomes for determining ~~ways to arrange metal patches in~~ blocks which are arranged to be contiguous on sides of ~~one side to~~ the reference point blocks;

calculating characteristics of [[the]] an antenna uniquely determined by the assigned chromosomes; and

optimizing the ~~searching for an optimum~~ chromosomes ~~to be~~ assigned to the reference point blocks by the genetic algorithm, to optimize ~~the antenna~~ characteristics of the antenna.

Claim 3 (Currently Amended): The antenna optimum design method as set forth in claim 2, wherein[[:]]

the antenna includes an unfed element plane formed in parallel with the antenna element plane[[,]] with a metal patch placed on a surface thereof[[;]], and

the metal patches on the antenna element plane and the unfed element plane are divided into given shapes in the dividing ~~the block generating step~~.

Claim 4 (Currently Amended): The antenna optimum design method as set forth in claim 2, wherein[[:]]

the antenna includes a ground plane with a metal surface[[;]], a short-circuit element for short-circuiting the metal patch on the antenna element plane and the metal surface on the ground plane[[;]], and a feed point connected to the ground plane for feeding the metal patch on the antenna element plane[[;]], and

the metal patch is placed in a block to which the short-circuit element and the feed point are connected.

Claim 5 (Currently Amended): The antenna optimum design method as set forth in claim 2, wherein[[:]]

the antenna includes a ground plane with a metal surface[[,]] and a short-circuit element plane with a metal patch placed on a surface thereof[[;]],

the metal patch placed on the short-circuit element plane constitutes a short-circuit element for short-circuiting the metal patch on the antenna element plane and the metal surface on the ground plane[[;]], and

the metal patches on the antenna element plane and the short-circuit element plane are divided into given shapes to produce the generated ~~generate~~ blocks in the dividing ~~block generating step~~.

Claim 6 (Currently Amended): The antenna optimum design method as set forth in claim 5, wherein[[:]]

the antenna includes a feed point with a central conductor connected to the metal patch on the antenna element plane and an outer conductor connected to the metal surface on the ground plane[[;]], and

the chromosomes include a position coordinate of the feed point on the short-circuit element plane.

Claim 7 (Original): The antenna optimum design method as set forth in claim 2, wherein

return loss characteristics and gain characteristics at multiple frequencies are used as the antenna characteristics.

Claim 8 (Currently Amended): The antenna optimum design method as set forth in claim 2, wherein

when it is decided that all metal patches in [[all]] blocks surrounding a ~~given~~ generated block be removed in the optimizing ~~step of determining ways to arrange metal patches~~, it is decided that a metal patch in the ~~given~~ generated block be removed.

Claim 9 (Currently Amended): The antenna optimum design method as set forth in claim 2, wherein

when it is decided that not all metal patches in [[all]] blocks surrounding a ~~given~~ generated block [[not]] be removed in the optimizing ~~step of determining ways to arrange metal patches~~, it is decided that a metal patch in the ~~given~~ generated block not be removed.

Claim 10 (Currently Amended): A non-transitory computer readable storage medium storing computer readable instructions thereon that, when executed by a processor, direct the processor to implement ~~program for implementing~~ an antenna optimum design method for designing a structure of an antenna, comprising: ~~as set forth in claim 2~~

dividing a metal patch on an antenna element plane into blocks to produce generated blocks;

setting alternate blocks of the generated blocks to be reference point blocks;

assigning a chromosome to each reference point block, the chromosomes for determining blocks which are arranged to be contiguous on sides of the reference point blocks;

calculating characteristics of an antenna uniquely determined by the assigned chromosomes; and

optimizing the chromosomes assigned to the reference point blocks by the genetic algorithm, to optimize characteristics of the antenna.

Claim 11 (Currently Amended): An antenna designed by an antenna optimum design method, comprising: ~~as set forth in claim 2~~

dividing a metal patch on an antenna element plane into blocks to produce generated blocks;

setting alternate blocks of the generated blocks to be reference point blocks;

assigning a chromosome to each reference point block, the chromosomes for determining blocks which are arranged to be contiguous on sides of the reference point blocks;

calculating characteristics of an antenna uniquely determined by the assigned chromosomes; and

optimizing the chromosomes assigned to the reference point blocks by the genetic algorithm, to optimize characteristics of the antenna.

Claim 12 (New): The maze generation method for generating a maze of Claim 1, wherein

setting alternate blocks of the generated blocks includes setting blocks in alternate rows of alternate columns of the generated blocks to be reference point blocks,

assigning a chromosome to each reference point block includes assigning a two-bit chromosome to each reference point block, and

sides of the reference point blocks include walls in the maze generation method.

Claim 13 (New): The maze generation method for generating a maze of Claim 1, wherein

optimizing the chromosomes assigned to the reference point blocks includes searching, by a genetic algorithm, optimized values of the chromosomes assigned to the reference point blocks, to optimize the characteristics of a meander-line antenna according to maximum and minimum values of an evaluation function.